

T09D02 – 9.3 IB Practice MS

1.	(i)	silver nitrate;	1	
	(ii)	oxidation; $\text{Cu} \rightarrow \text{Cu}^{2+} + 2\text{e}^-$;	2	
	(iii)	(silver nitrate) solution turns blue/grey or black or silver solid forms; copper ions form/ Cu^{2+} ions form/silver deposited;	2	
				[5]
2.	(i)	(diagram showing) container, liquid, electrodes and power supply; bromine formed at + electrode; potassium formed at <input type="checkbox"/> electrode;	3	
		<i>Award [1] for both correct products shown at wrong electrodes, or if no polarity indicated.</i>		
	(ii)	electrons flow through connecting wires; ions move (through liquid) to electrodes (and lose/gain electrons);	2	
	(iii)	$\text{K}^+ + \text{e}^- \rightarrow \text{K}$; $2\text{Br}^- \rightarrow \text{Br}_2 + 2\text{e}^-$;	2	
		<i>No need to indicate polarity of electrodes.</i> <i>Accept e instead of e^-.</i>		
				[7]
3.	(i)	sodium chloride crystals consist of ions in a rigid lattice/ions can not move about; when melted the ions are free to move or ions move when a voltage is applied; in electrolysis positive sodium ions or Na^+ ions move to the negative electrode or cathode; and negative chloride ions or Cl^- move to the positive electrode or anode;	4	
	(ii)	sodium formed at cathode or negative electrode; $\text{Na}^+ + \text{e}^- \rightarrow \text{Na}$; chlorine formed at anode or positive electrode; $2\text{Cl}^- \rightarrow \text{Cl}_2 + 2\text{e}^-$;	4	
		<i>1st and 3rd marks can be scored in (i).</i>		
	(iii)	manufacture of sodium and chlorine/one stated use of chlorine or sodium;	1	
				[9]